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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/060,236 | 02/01/2002 | William Brent Wilson | P21748 | 8492 |

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GREENBLUM & BERNSTEIN, P.L.C.
1950 ROLAND CLARKE PLACE
RESTON, VA 20191

EXAMINER

AN, SHAWN S

ART UNIT PAPER NUMBER

2613

DATE MAILED: 01/30/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.
10/060,236

Applicant(s)
William Brent Wilson

Examiner
Shawn An

Art Unit
2613



-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE three MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136 (a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on _____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11; 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above, claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 14-20 is/are allowed.
- 6) ☒ Claim(s) 1-13 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claims _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on Feb 1, 2002 is/are a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☒ Acknowledgement is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☒ Certified copies of the priority documents have been received in Application No. 09/168,852.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- *See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. § 119(e).
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgement is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s). 2 6) ☐ Other: _____

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DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 4-5, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agarwal (5,812,788) in view of Liu et al (5,680,482).

Regarding claims 1 and 5, Agarwal discloses a method of reducing processing power requirements of a video decoder, and a system for processing video data, comprising:

a decoder (Fig. 17) for decoding video data;

the decoder for controlling computational processing requirements of a decoder (Fig. 2 and Fig. 17) based on the throttling amount (Col. 28, lines 2-4), comprising reducing an amount of processing performed on the decoded video data.

Agarwal does not particularly disclose measuring decoder's processing capability and processing power required to decode bitstream.

However, Liu discloses processing power required to decode bitstreams (Col. 11, lines 43-56) and measuring of decoder's processing capability (Col. 4, lines 22-26) so that one or more bitstreams can be decoded by a range of power decoder to result in certain visual quality.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing Agarwal's reference to incorporate the concept of measuring decoder's processing capability and processing power required to decode bitstreams as taught by Liu so that one or more bitstreams can be decoded by a range of power decoder to result in certain visual quality.

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Regarding claims 4 and 8, Liu et al discloses measuring an indication/type of an amount of processing required for the bitstream (Col. 4, lines 22-26).

3. Claims 9-13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agarwal (5,812,788) in view of Liu et al (5,680,482) and Park (5,386,241).

Regarding claims 9 and 12, Agarwal discloses a method of reducing processing power requirements of a video decoder, and a system for processing video data, comprising:

a decoder (Fig. 17) for decoding video data;

the decoder for controlling computational processing requirements of a decoder (Fig. 2 and Fig. 17) based on the throttling amount (Col. 28, lines 2-4);

Agarwal does not particularly disclose measuring decoder's processing capability and processing power required to decode bitstream, and reducing the number of coefficients inverse quantized and inverse DCT transformed by selectively setting coefficients to alternate values.

However, Liu et al discloses processing power required to decode bitstreams (Col. 11, lines 43-56) and measuring of decoder's processing capability (Col. 4, lines 22-26) so that one or more bitstreams can be decoded by a range of power decoder to result in certain visual quality.

Park discloses of reducing the number of coefficients inverse quantized and inverse DCT transformed by selectively setting coefficients to alternate values (Col. 8, lines 12-19) in order to make the downstream processing of these coefficients less computationally intensive.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art employing Agarwal's reference to incorporate the concept of measuring decoder's processing capability and processing power required to decode bitstreams as taught by Liu so that one or more bitstreams can be decoded by a range of power decoder to result in certain visual quality, and also incorporate the concept of reducing the number of coefficients inverse quantized and inverse DCT transformed by selectively setting coefficients to alternate values as taught by Park in order to make the downstream processing of these coefficients less computationally intensive.

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Regarding claim 10, Park discloses alternate values of coefficients comprising zero (Col. 5, lines 63-67).

Regarding claims 11 and 13, Liu et al discloses measuring an indication/type of an amount of processing required for the bitstream (Col. 4, lines 22-26).

4. Claims 2-3 and 6-7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Agarwal and Liu et al as applied to claims 1 and 5 above, respectively, and further in view of Malladi et al. (5,818,532).

Regarding claims 2-3 and 6-7, Agarwal does not particularly disclose limiting a function of at least one post filter or one format conversion filter.

However, Malladi et al discloses reducing the processing power used for one or more decoder function by limiting decoder function (Col. 20, lines 31-36 and lines 44-47) in a predetermined manner to reduce the computational requirements of decoding a bitstream.

Therefore, it would have been obvious to a person of ordinary skill in the relevant art to employ Agarwal's reference to incorporate the concept of reducing the processing power by limiting decoder function as taught by Malladi so as to apply the concept in a conventionally well known post filter or format conversion filter to reduce the computational requirements of decoding a bitstream.

Allowable Subject Matter

5. Claims 14-20 are allowed.

6. The following is an examiner's statement of reasons for allowance:

claims 14-17 recite the novel feature of a method of reducing processing power requirements of a video decoder, comprising: determining a throttling amount based on at least

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one measure of the computational processing power required to decode one or more bitstreams, and a measure of the decoder's processing capabilities;

controlling computational processing requirements of the decoder based on the throttling amount, the controlling the processing requirements comprising:

comparing two temporal references corresponding to two motion vectors of a picture of the video data being decoded;

determining which one of the two motion vectors has a closer temporal distance from the picture being decoded, based on the temporal references; and

processing only the one of the two motion vectors having the closer temporal distance.

claims 18-20 recite a system for processing an incoming video data, comprising:

a video decoder that receives and decodes the video data;

a decoder throttling device for determining a throttling amount based on at least one of a measure of the computational processing power required to decode one or more bitstreams, and a measure of the decoder's processing capabilities; and

a bitstream indicator extracting device that extracts two temporal references associated with two motion vectors of each picture to be decoded by the video decoder;

wherein the decoder throttling device provides the throttling amount to the decoder, which processes, for each picture, only one of the two motion vectors having a closer temporal distance from the picture being decoded, based on a comparison of the two temporal references associated with the two motion vectors.

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Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- A) Tucker et al (5,903,313), Method and apparatus for adaptively performing motion compensation in a video processing apparatus.
- B) Wilson (6,389,071 B1), Method for reducing processing power requirements of a video decoder.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Shawn An whose telephone number (703) 305-0099 and schedule are Tuesday-Friday.


CHRIS KELLEY
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2600



SSA

January 23, 2003